

CLAIMS

1. A data transmitter characterized by
comprising:
a plurality of integrated circuits each having
at least one input/output circuit; and
a transmission line which connects to the
input/output circuits of said integrated circuits and
has an element that changes an effective reactance per
unit length depending on at least one of a signal
voltage and a signal current.

2. A data transmitter according to claim 1,
characterized in that said transmission line is formed
at least in or on a printed wiring board.

3. A data transmitter according to claim 1,
characterized in that said integrated circuits and said
transmission line are formed on a single printed wiring
board.

4. A data transmitter according to claim 1,
characterized in that said transmission line comprises
a grounded ground conductor,
a signal conductor which receives a signal
voltage between the ground conductor and the signal
conductor, and
an insulating material which contains the
element and insulates the signal conductor and the
ground conductor from each other.

5. A data transmitter according to claim 4,

2 characterized in that the element includes one of a
3 dielectric and a magnetic substance.

6. A data transmitter according to claim 5,
2 characterized in that the dielectric exhibits a
3 nonlinear relationship between an electric field and
4 dielectric polarization generated in the dielectric.

7. A data transmitter according to claim 6,
2 characterized in that the dielectric is at least one of
3 lead zirconate titanate, bismuth strontium tantalate,
4 ferroelectric, and liquid crystal.

8. A data transmitter according to claim 5,
2 characterized in that the magnetic substance exhibits a
3 nonlinear relationship between a magnetic field and
4 magnetization generated in the magnetic substance.

9. A data transmitter according to claim 8,
2 characterized in that the magnetic substance is at least
3 one of NiZn ferrite and sendust.

10. A data transmitter according to claim 4,
2 characterized in that
3 the ground conductor forms a plurality of
4 parallel-arrayed closed conduits,
5 the insulating material fills each closed
6 conduit, and
7 the signal conductor is arranged in each
8 insulating material.

11. A data transmitter according to claim 1,
2 characterized in that a maximum value of a change

3 component in the effective reactance per unit length
4 that changes depending on at least one of the signal
5 voltage and the signal current in said transmission line
6 is not smaller than a value of a fixed component
7 independent of the signal voltage and the signal current.

12. A data transmission line characterized by
2 comprising an element which changes an effective
3 reactance per unit length depending on at least one of a
4 signal voltage and a signal current.

13. A data transmission line according to
2 claim 12, characterized by comprising:
3 a grounded ground conductor;
4 a signal conductor which receives a signal
5 voltage between said ground conductor and said signal
6 conductor; and
7 an insulating material which contains the
8 element and insulates said signal conductor and said
9 ground conductor from each other.

14. A data transmission line according to
2 claim 13, characterized in that the element includes one
3 of a dielectric and a magnetic substance.

15. A data transmission line according to
2 claim 14, characterized in that the dielectric exhibits
3 a nonlinear relationship between an electric field and
4 dielectric polarization generated in the dielectric.

16. A data transmission line according to
2 claim 15, characterized in that the dielectric is at

3 least one of lead zirconate titanate, bismuth strontium
4 tantalate, ferroelectric, and liquid crystal.

17. A data transmission line according to
2 claim 14, characterized in that the magnetic substance
3 exhibits a nonlinear relationship between a magnetic
4 field and magnetization generated in the magnetic
5 substance.

18. A data transmission line according to
2 claim 17, characterized in that the magnetic substance
3 is at least one of NiZn ferrite and sendust.

19. A data transmission line according to
2 claim 13, characterized in that
3 said ground conductor is formed at least in or
4 on a printed wiring board,
5 said insulating material is arranged in the
6 printed wiring board, and
7 said signal conductor is arranged in said
8 insulating material.

20. A data transmission line according to
2 claim 13, characterized in that
3 said ground conductor and said signal
4 conductor are formed apart from each other on a printed
5 wiring board, and
6 said insulating material is arranged between
7 said ground conductor and said signal conductor on the
8 printed wiring board and joined to said ground conductor
9 and said signal conductor.

21. A data transmission line according to
2 claim 12, characterized in that a plurality of data
3 transmission lines are parallel-arrayed.

22. A data transmission line according to
2 claim 13, characterized in that
3 said ground conductor forms a plurality of
4 parallel-arrayed closed conduits,
5 said insulating material fills each closed
6 conduit, and
7 said signal conductor is arranged in each
8 insulating material.

23. A data transmission line according to
2 claim 12, characterized in that a maximum value of a
3 change component in the effective reactance per unit
4 length that changes depending on at least one of the
5 signal voltage and the signal current is not smaller
6 than a value of a fixed component independent of the
7 signal voltage and the signal current.

24. A data transmission method characterized
2 by comprising the steps of:
3 preparing a transmission line whose effective
4 reactance per unit length changes depending on at least
5 one of a signal voltage and a signal current; and
6 transmitting a signal between a plurality of
7 integrated circuits via the transmission line.

25. A data transmission method according to
2 claim 24, characterized in that the transmitting step

- 3 comprises the step of generating a nonlinear wave
- 4 corresponding to the signal in the transmission line.